APPENDIX E

MEMORANDUM ON SOUTHEAST WISCONSIN FAULTS

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MEMORANDUM

TO: Pat Kressin

FROM: Geof Parish

DATE: March 1, 2005

SUBJECT: Southeast Wisconsin Faults

There are no recorded major damage causing earthquakes in the state of Wisconsin (von Hake, 1978). There is an inactive fault located approximately 30 miles to the northwest in Waukesha County, which is referred to as the Waukesha fault (Sverdrup and others, 1997). The glacial sediments overlying this fault are not offset by the fault, which is an indication that the fault has been inactive for at least approximately 15,000 years.

In a listing of historical earthquakes in Wisconsin, the US Geological Survey reported that an earthquake occurred May 6, 1947 near the shore of Lake Michigan, south of Milwaukee (http://neic.usgs.gov/neis/states/Wisconsin/ Wisconsin_history.html). This quake was reported to have a Modified Mercalli Intensity scale level of V (felt by nearly everyone, many awakened, some dishes and windows broken, unstable objects moved and pendulum clocks may stop). The location of this earthquake does not correspond to any known fault. The US Geological Survey has published maps that qualify the risk to structures from earthquake activity. Attached is a map copied from a US Geological Survey Fact Sheet 131-02. Southeast Wisconsin falls into the second lowest level of anticipated seismic activity.

An earthquake of Richter magnitude 4.2 occurred in north central Illinois, 10 miles west of Ottawa, Illinois on June 28, 2004, approximately 100 miles southwest of the site. The earthquake intensity at the project location was mapped by the US Geological Survey as II to III (Weak), which is an area of little perceived motion and no damage. A map of the earthquake intensity based on 7,835 responses to the US Geological Survey is attached. The quake possibly occurred on the Sandwich Fault zone, which is a minor fault in Illinois. The northern extension of the third level of anticipated seismic activity on the attached US Geological Survey map likely reflects that fault. The low level of risk reflects associated with this fault zone arises from the fact that the fault is a minor fault and there is little recorded activity. There is an area of greater risk farther to the south in Illinois associated with the New Madrid fault zone.

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However, the distance between southeast Wisconsin and the fault zone accounts for the low level of risk at the project location.

References

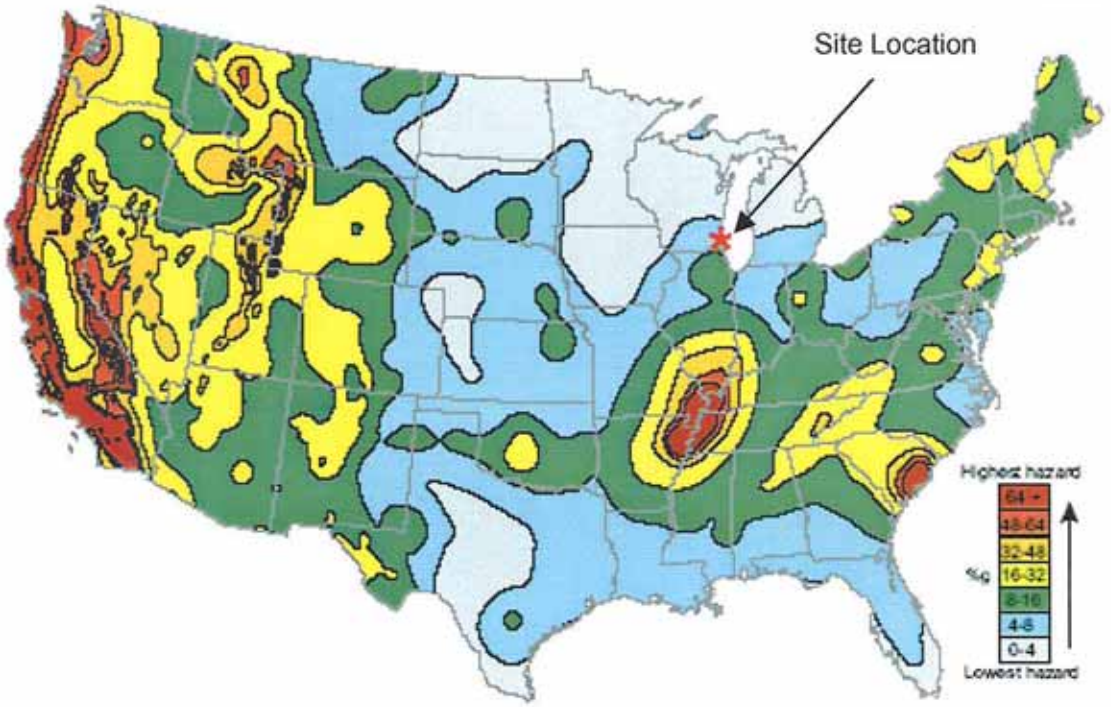
Sverdrup, K.A., Kean, W.F., Herb, S., Brukardt, S.A. and Friedel, R.J., 1997, Gravity Signature of the Waukesha Fault, Southeastern Wisconsin; Geoscience Wisconsin, v. 16, pp. 47-54.

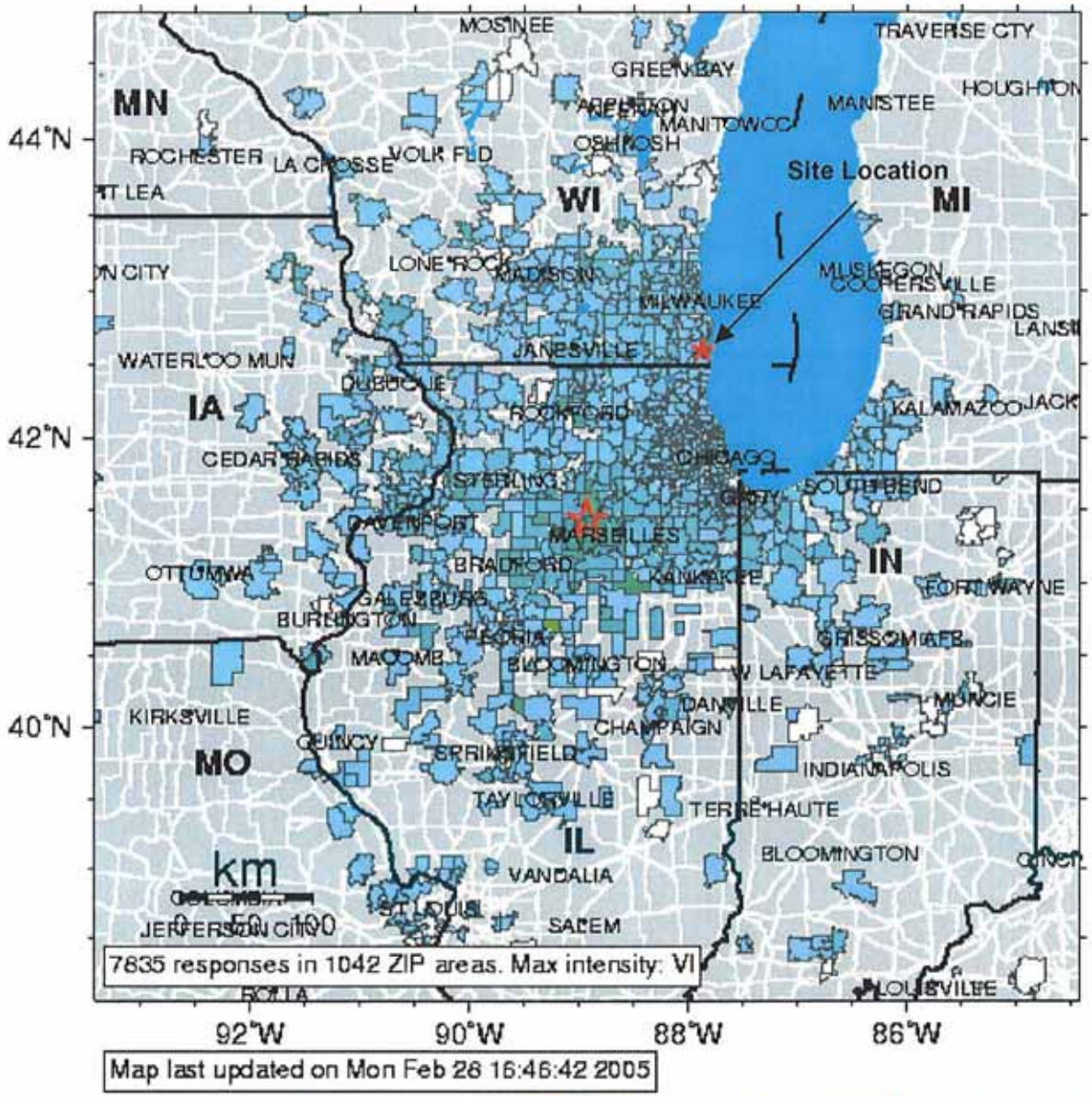
USGS, 2003, Earthquake Hazard in the Heart of the Homeland; Fact Sheet 131-02, 4p.

USGS, 2004, Poster of the Northern Illinois Earthquake of 28 June 2004

Von Hake, C.A., 1978, Earthquake Information Bulletin, U.S. Geological Survey, National Earthquake Information Center, v. 10, no. 3,

The U.S. Geological Survey shaking-hazard maps for the United States are based on current information about the rate at which earthquakes occur in different areas and on how far strong shaking extends from earthquake sources. Colors on this particular map show the levels of horizontal shaking that have a 1-in-50 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of g (g is the acceleration of a falling object due to gravity).





Map last updated on Mon Feb 28 16:46:42 2005

INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy